Space Weather Forecast

Issued on Saturday 26 October 2024 at 01:29 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate flares likely, slight chance of further Strong flares. Chance of G1-G2/Minor-Moderate geomagnetic storm intervals day 1 (26 Oct).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate in the past 24 hours with an isolated Moderate class flare at 25/0733 UTC originating from an active region located in the far southeast.

There are currently eleven sunspot regions on the disc. The main focus is a cluster in the southeast of the disc, with three significant regions located here. They all maintain fairly complex appearances and magnetic configurations. New minor regions were numbered in the northeast and southeast during the period, meanwhile a small region in the southeast decayed.

No new Earth directed CMEs (coronal mass ejections) were observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of Background conditions. Speeds were Slow-ambient, generally varying between 300-350km/s. The Interplanetary Magnetic Field remained Weak, with the north-south component also Weak. Geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) persisted at background with no Solar Radiation Storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with Moderate-class flares considered likely and a slight chance of Strong-class flares, most probable from the numerous active regions in the southeast disc.

Solar Wind / Geomagnetic Activity:

A CME resulting from the Strong flare of a sunspot in the southeast disc on 24 Oct has been remodelled as a flanking impact at Earth on day 1 (26 Oct). This may combine with one or more weak CMEs that left the Sun on 22/23 Oct which have a small chance of a glancing impact, also on day 1 (26 Oct).

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Solar winds are currently at Background levels. The onset of a fast wind from a coronal hole is expected on day 1 (26 Oct) with speeds peaking at Slightly Elevated or Elevated, before waning on day 2 (27 Oct). It is likely that CME influence may mask this enhancement, particularly on day 1 (26 Oct) with speeds peaking at Elevated to Strong levels following any arrival. Mainly Background winds are expected on days 3 and 4 (28 and 29 Oct).

Activity is expected to be Quiet to Active on day 1 (26 Oct) with a chance of peak G1/Minor to G2/Moderate Storm conditions should geomagnetic conditions be favourable following the CME arrival. Activity should be Quiet to Active on day 2 (27 Oct), with a slight chance of G1/Minor Storm conditions at first. From day 3 (28 Oct) onwards activity should return to Quiet to Unsettled levels, although further flare and CME activity from the numerous active regions in the southeast disc could change this.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to persist at Background with no Solar Radiation Storms expected.

Geomagnetic Storms

Geomagnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	50	10	1	1
Strong	G3	No	5	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 (M Class)	Yes	60	60	60	60
Very Active	R3-R5 (X Class)	No	10	10	10	10

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	10	10	10
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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